

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
13 January 2005 (13.01.2005)

PCT

(10) International Publication Number  
**WO 2005/003537 A1**

(51) International Patent Classification<sup>7</sup>: **F02D 41/02**,  
41/40

(21) International Application Number:  
PCT/JP2004/009998

(22) International Filing Date: 7 July 2004 (07.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2003-193310 8 July 2003 (08.07.2003) JP

(71) Applicant (for all designated States except US): **NISSAN MOTOR CO., LTD.** [JP/JP]; 2, Takara-cho, Kanagawa-ku, Yokohama-shi, Kanagawa 2210023 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KITAHARA, Yasuhisa** [JP/JP]; 1-21-1-507, Kamiookahigashi, Konan-ku, Yokohama-shi, Kanagawa 2330001 (JP).

(74) Agents: **HASHIMOTO, Takeshi** et al.; c/o Shiga Patent Office, Ekisaikai Bldg., 1-29, Akashi-cho, Chuo-ku, Tokyo 1040044 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

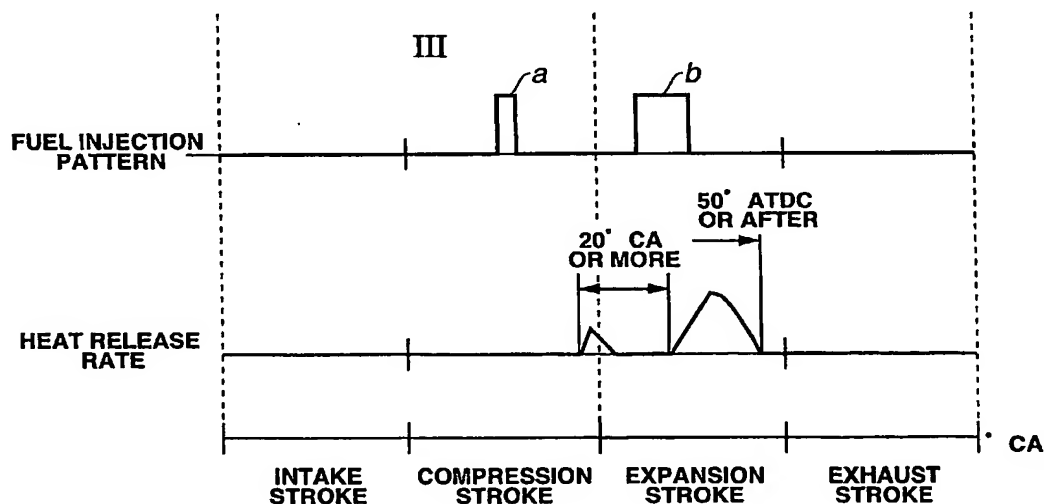
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **COMBUSTION CONTROL FOR ENGINE**



(57) Abstract: A combustion control apparatus for an internal combustion engine, includes an exhaust purifier in an exhaust passage, and a combustion controlling actuator such as a fuel injector to cause main combustion, and to cause preliminary combustion prior to the main combustion. A controller controls fuel injection to produce the preliminary combustion at or near top dead center, and controls fuel injection to start the main combustion after an end of the preliminary combustion.